

Requirements: Biochemistry and Molecular Biology

Interdisciplinary

The intersection of chemistry and biology provides a creative focus for understanding the molecular processes of life. Kenyon's biology and chemistry departments administer an interdisciplinary program offering two majors: biochemistry and molecular biology. Each major combines courses from both departments.

The Kenyon College faculty voted to change from Kenyon units to semester hours. This change will go into effect for all students who start at the College in the fall of 2024. Both systems will be used throughout the course catalog with the Kenyon units being listed first.

The Curriculum

The biochemistry major provides a chemistry-based curriculum with a significant biology component. The molecular biology major combines a substantial chemistry background with detailed studies in cellular and molecular biology. Both majors prepare students for postgraduate studies in related fields.

An oversight committee for biochemistry and molecular biology, composed of faculty members from the chemistry and biology departments, administers the program and determines requirements for the Senior Capstone and the Honors Program. Students interested in these majors should contact either of the program co-directors.

Requirements for the Majors

The biochemistry major and the molecular biology major have many requirements in common. In addition, each has its own set of required courses.

Courses required for BOTH majors (typically 4.75 units/38 semester hours):

Introductory biology (two semesters or equivalent placement)

BIOL 115: Energy in Living Systems

BIOL 116: Information in Living Systems

Introductory chemistry (two semesters or equivalent)

CHEM 121: Introductory Chemistry and CHEM 124: Introductory Chemistry II

Or CHEM 122: Chemical Principles

Introductory chemistry labs (two semesters)

CHEM 123: Introductory Chemistry Lab I

CHEM 126: Introductory Chemistry Lab II

Organic chemistry (two semesters)

CHEM 231: Organic Chemistry I

CHEM 232: Organic Chemistry II

Organic Chemistry Lab (one semester)

CHEM 233: Organic Chemistry Lab I

CHEM 256: Biochemistry

BIOL 263: Molecular Biology — **must** be completed before senior year

In addition to the requirements listed above for both majors, students majoring in biochemistry must complete the following courses (typically 2.75 units/22 semester hours):

Chemistry courses

CHEM 335: Kinetics and Thermodynamics

CHEM 341: Instrumental Analysis

CHEM 371: Advanced Lab: Biochemistry

Biology courses

One course from BIOL 109Y-110Y, 230, 238, 255, 266, 315, 321, 333, 345, 358 or 375

Chemistry labs

CHEM 234: Organic Chemistry Lab II

Three advanced lab courses chosen from CHEM 370, 372, 373, 374 or 375. BIOL 264 also satisfies this requirement. (Note: 0.5 units/4 semester hours of CHEM 375 must be completed to count as a single advanced lab).

In addition to the requirements listed above for both majors, students majoring in molecular biology must complete the following courses (typically 2.75 units/22 semester hours):

Biology courses

One additional lecture/discussion course in biology at the 200 or 300 level. MATH 258 and CHEM 335 also satisfy this requirement.

One additional lecture/discussion course from the cellular and molecular biology category (BIOL 230, 238, 255, 266, 315, 321, 333, 345 351D or 375).

Biology labs

BIOL 109Y-110Y: Introduction to Experimental Biology

BIOL 264: Gene Manipulation

Two advanced labs from BIOL 230, 239, 256, 267, CHEM 371, or NEUR 350. Two semesters of BIOL 385 (Research in Biology) can count toward this requirement.

BIOL 475: Senior Seminar. Honors students instead take BIOL 497 and 498.

Senior Capstone

Students majoring in biochemistry perform the Senior Capstone under the supervision of the Department of Chemistry. Students majoring in molecular biology perform the Senior Capstone under the supervision of the Department of Biology. For details, please refer to each department's Senior Capstone requirements listed in the course catalog.

Honors

Honors thesis projects may be conducted under the direct supervision of a faculty member in either department (biology or chemistry) for either major (molecular biology or biochemistry). Discussion between the student and research advisor regarding the department in which honors will be conducted should begin by the spring of the junior year, and a preliminary decision should be made by the end of the semester. A final decision is made in consultation with the program co-directors by the end of the drop-add period in the fall of the senior year. Honors are awarded according to the degree with which the student graduates, regardless of the department under which the honors process is conducted.

Transfer Credit Policy

Students studying off campus may count one upper-level lecture/discussion course and one upper-level lab course toward the major.

Transfer students must consult with the registrar and a program co-director to assess appropriate course equivalency credit.